

DISCUSSION OF THE AMENDMENT

Due to the length of the specification herein, Applicants will cite to the paragraph number of the published patent application (PG Pub) of the present application, i.e., US 2007/0185223, when discussing the application description, both in this section and in the Remarks section, *infra*, rather than to page and line of the specification as filed.

Claim 1 has been amended to require the presence of tertiary amine c2) as a catalyst, as supported in the specification at paragraph [0041], and to recite --at least one of-- the recited components, as supported, for example at paragraphs [0023] and [0027].

Claims 2, 3 and 5-7 have been amended to be consistent with the above-discussed amendment to Claim 1.

New Claims 10-19 have been added. Claims 10 and 11 are supported in the specification at paragraph [0013]. Claim 12 is supported in the specification at paragraph [0030]. Claim 13 is supported in the specification at paragraph [0031]. Claim 14 is supported in the specification at paragraphs [0033]-[0034]. Claim 15 is supported in the specification at paragraph [0038]. Claim 16 is supported in the specification at paragraph [0044]. Claims 17 and 18 are supported in the specification at paragraph [0020]. Claim 19 is supported in the specification at paragraph [0039].

No new matter is believed to have been added by the above amendment. Claims 1-7 and 9-19 are now pending in the application.

REMARKS

The rejection of Claims 1, 2, 6, 7 and 9, and Claim 5, under 35 U.S.C. § 103(a) as unpatentable over U.S. 2003/0166735 (Clatty) and further in view of U.S. 5,159,012 (Doesburg et al), is respectfully traversed.

As recited in above-amended Claim 1, an embodiment of the present invention is a shoe sole comprising a tin-free polyurethane foam that has a density of from 100 to 800 g/l and is obtained by reacting a) at least one polyisocyanate with b) at least one compound having isocyanate-reactive hydrogen atoms in the presence of as a catalyst, c1) at least one bismuth carboxylate in an amount of from 0.2 to 2% by weight, based on the total weight of the component b) and c2) at least one tertiary amine.

Claim 6 is of the same scope but is drawn to a process.

Clatty is drawn to a rigid, closed-cell polyurethane foam produced by reacting an organic polyisocyanate with an isocyanate-reactive mixture in which a significant amount of bio-based polyol is present [0016] in the presence of a catalyst, which may be a tertiary amine or metal compound known in the art [0051], including organic metal compounds, especially organic tin, bismuth and zinc compounds, suitable bismuth compounds including bismuth neodecanoate, bismuth versalate and various bismuth carboxylates known in the art [0053], which catalysts may be used as mixtures [0054]. Acknowledging that Clatty does not disclose their rigid, closed-cell polyurethane foams for use as shoe soles, the Examiner relies on Doesburg et al. Doesburg et al discloses a method for manufacture of polyurethane elastomers from a reaction mixture which comprises a polyol, an isocyanate, water and a bismuth catalyst (Abstract), which polyurethane elastomers may be used as a material for shoe soles (paragraph bridging columns 1 and 2).

The Examiner holds that it would have been obvious to use the polyurethane foam of Clatty for use in a shoe sole, in view of Doesburg et al.

In reply, the Examiner has not established that a **rigid, closed cell** polyurethane foam would have applicability as a shoe sole. In addition, the applied prior art could not have predicted the results disclosed in the specification herein, shown in Example 4 and Comparative Example 4. Comparative Example 4 uses a tin catalyst while Example 4 uses a bismuth catalyst according to the present invention. As shown in Table 1 and Table 2 in the specification herein, the results are similar. An object of the present invention is to provide systems which can be used for producing polyurethane foams, in particular microcellular polyurethane moldings, which should, without the use of tin catalysts and without use of catalysts comprising transition metals, display a curing behavior which is at least comparable to known systems and display other processing and use properties which are at least comparable and should at the same time have toxicological and economic advantages, as described in the specification at paragraph [0008]. As discussed above with regard to Example 4 and Comparative Example 4, the substitution of organotin by a bismuth carboxylate surprisingly leads to the same or similar mechanical properties as well as to the same or similar curing behavior.

For all of the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claim 3 under 35 U.S.C. § 103(a) as unpatentable over Clatty in view of Doesburg et al, and further in view of U.S. 5,405,884 (Londrigan et al), is respectfully traversed. The Examiner relies on Londrigan et al for a disclosure of a ratio between an organic acid metal salt catalyst and a tertiary amine in a process for preparing a rigid, closed-cell polyisocyanurate foam (column 5, lines 35-50).

In reply, Londrigan et al does not disclose a bismuth carboxylate, so that the ratio disclosed therein is irrelevant. Indeed, the cation of their organic acid metal salt is an alkali metal and/or alkaline earth metal (column 3, line 49ff). Londrigan et al does not remedy any

of the above-discussed deficiencies in the combination of Clatty and Doesburg et al.

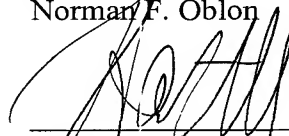
Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 4 and 9 under 35 U.S.C. § 103(a) as unpatentable over Clatty in view of Doesburg et al., and further in view of U.S. 6,331,577 (Volkert et al.), is respectfully traversed. The Examiner relies on Volkert et al for disclosing flexible integral polyurethane foams for use in shoe soles (column 1, lines 6-11). However, Clatty is drawn to rigid foams. Only with the present disclosure as a guide would one of ordinary skill in the art modify the rigid, closed-cell polyurethane foam of Clatty to be a flexible foam, which would defeat Clatty's purposes. Accordingly, it is respectfully requested that this rejection be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. The Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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